

### REMARKS

Claims 1, 3-16, 18-22, 32-38, 40, 41, 44 and 45 are pending in this application. No new matter is introduced by this amendment. Applicants respectfully request reconsideration and allowance of the application as amended.

#### *Interview Summary*

The undersigned Applicants' representative thanks Examiner Lorengo for his helpful comments and suggestions during the personal interview conducted with Applicants' representative on July 16, 2007.

Pursuant to 37 C.F.R. § 1.133(b), the following description is submitted as a complete written statement of the reasons presented at the interview as warranting favorable action. The following statement is intended to comply with the requirements of MPEP § 713.04 and expressly sets forth: (A) a brief description of the nature any exhibit shown or any demonstration conducted; (B) identification of the claims discussed; (C) identification of specific prior art discussed; (D) identification of the principal proposed amendments of a substantive nature discussed; (E) the general thrust of the principal arguments; (F) a general indication of any other pertinent matters; and (G) the general results or outcome of the interview, if appropriate.

(A) No exhibits were shown or demonstrations conducted.

(B) The pending claims were discussed generally, and independent claims 1, 11 and 32 were discussed in particular.

(C) U.S. Pat. No. 6,478,903 to *John, Jr. et al.* ("*John*"), U.S. Pat. No. 5,654,520 to *Boberg*, and U.S. Pat. No. 4,853,052 to *Calsson et al.* ("*Calsson*") were discussed, as summarized below.

(D) Proposed amendments to claims 1, 11 and 32 were discussed, as summarized below.

(E) In response to the rejection under 35 U.S.C. § 103(a) based on *John*, *Boberg* and *Calsson*, Applicants' representative argued that *John* is not properly combined with *Boberg* or *Calsson* as proposed in the rejection. Specifically, Applicants' representative noted that *Boberg*

and *Calsson* disclose delay compositions, which burn or “deflagrate” at relatively slow rates. Applicants’ representative then argued that *John* discloses a primer composition for small arms, and that one of ordinary skill in the art would not look to delay compositions such as those disclosed in *Boberg* and *Calsson* to modify *John* because delay is never desirable in small arms primer compositions.

Applicants’ representative and Examiner Lorengo further discussed the possibility of reciting specific primary explosive compositions in the independent claims to more fully describe the nature of the claimed priming mixtures.

(F) No other pertinent matters were discussed.

(G) It was agreed that a response, including a declaration by one of the inventors, would be submitted for Examiner Lorengo’s consideration. Applicants’ representative further indicated that he would recommend to Applicants that specific primary explosive compositions be recited in the independent claims. Examiner Lorengo indicated that he would reconsider the rejections and cited art upon receiving the response.

#### ***Claim Rejections Under 35 USC § 103***

Claims 1-22, 32-41, 44 and 45 stand rejected under 35 USC § 103(a) as being unpatentable over *John* in view of *Boberg* or *Calsson*. In the rejection, the Examiner states that *John* discloses primer mixes substantially as claimed, without the inclusion of bismuth oxide. The Examiner contends that it would have been obvious to one of ordinary skill in the art to use bismuth oxide in *John*’s primer mixes in light of *Boberg*’s and *Calsson*’s use of bismuth trioxide. Applicants respectfully traverse.

In this traversal, reference is made to the enclosed Declaration under 37 CFR §1.132 (“Declaration”) of Donald Pile, who is a named inventor in this application. In brief, the Declaration presents evidence as to the knowledge of one of ordinary skill in the munitions art, and why one of ordinary skill would not find it obvious to modify the primer mixes of *John* using the compositions disclosed in *Calsson* and *Boberg*. *John* and the teaching references *Calsson* and *Boberg* are addressed in detail below.

John

*John* discloses non-toxic primer mixes. The primer mixes in *John* were developed for use in small arms as a substitute for lead styphnate-based primers (see col. 1, lines 54-63, and paragraph 8 of the Declaration). In small arms primer mixes, it is critical that the small arm round fire as near to simultaneously as possible upon trigger pull (see paragraph 9 of the Declaration). If near simultaneous firing does not occur, the shooter might reorient the firearm during the delay between trigger pull and firing and discharge the weapon in an unintended direction. The accuracy of such a delayed firing would be compromised, and more important, the shooter might alter the firearm orientation to an unsafe direction. Accordingly, small arms primer mixes are designed to “detonate” at high velocities, as opposed to burning or “deflagrating,” which occur at relatively low velocities (see paragraph 16 of the Declaration). Typical detonation velocities for small arms primer mixes are in the range of at least 4500 meters per second (see paragraph 9 of the Declaration).

Calsson

As discussed in the enclosed Declaration, the pyrotechnical charges disclosed in *Calsson* are not suitable for use in small arms primer compositions because they are specifically geared to creating a pyrotechnical delay. While *Calsson* differentiates between “ignition” and “delay” charges in the table shown in column 2, the burn rates obtained in both *Calsson*’s delay and ignition charges would induce unacceptable “delay” when compared to small arms primer mix detonation rates. Notably, the claims of *Calsson* recite methods of “producing pyrotechnical delay.” Further, in Table 2 of *Calsson*, the ignition charge containing 49% bismuth trioxide has a burn rate of only 50 millimeters per second. *Calsson*’s disclosed range of burn rates of between “3 and 150 mm/sec.” (col. 2, lines 3-5) has an upper value that is only slightly higher than the high bismuth trioxide content example charge. In any case, the upper range value of 150 millimeters per second is several orders of magnitude too slow for use in a small arms primer mix such as is disclosed in *John* (see paragraph 19 of the Declaration).

Because *Calsson*’s charges are specifically addressed to generating a pyrotechnical delay, one of ordinary skill in the art would not have found it obvious to modify the primer mixes in *John* using the teachings of *Calsson*. To the contrary, the specific teachings of pyrotechnic delay

in *Calsson* would have deterred one of ordinary skill from modifying *John* because of the expectation that a similar delay would be induced in *John*'s modified primer composition. Such delay would destroy *John*'s operability as a primer composition. If when combined, references produce an inoperative device, the references teach away from such combination. See *Tec Air, Inc. v. Denso Mfg. Michigan Inc.*, 52 USPQ 2d 1294, 1298 (Fed. Cir. 1999) (quoting *In re Spinnoble*, 160 USPQ 237, 244 (C.C.P.A. 1969)).

*Boberg*

Applicants note that there appear to be typographical errors in Examples 2, 4 and 5 of *Boberg*. Examples 2, 4 and 5 list burn rates measured in meters per second. These Examples conflict with the EP publication No. 0 599 792 B1 of the original Swedish priority document for *Boberg* - SE 9203571. EP 0 599 792 B1 lists the burn rates in corresponding Examples 2, 4 and 5 in millimeters, not meters, per second. The use of meters per second in Examples 2, 4 and 5 of *Boberg* also conflicts with *Boberg*'s stated "suitable burn rate" range of "between 10 to 200 mm/s" (col. 2, lines 34-36). Upon reviewing the example compositions and in consideration of the discrepancies between EP 0 599 792 B1 and *Boberg*, Declarant Pile was of the opinion that the burn rates in Examples 2, 4 and 5 of *Boberg* should be measured in millimeters, not meters, per second (see paragraphs 13-15 of the Declaration). A copy of EP 0 599 792 B1 is enclosed with this Response for the Examiner's consideration.

Accordingly, as in the case of *Calsson*, *Boberg*'s burn rates are several orders of magnitude too slow for use in a small arms primer mix such as is disclosed in *John* (see paragraph 17 of the Declaration). Assuming the burn rate in Example 2 is correctly measured in millimeters per second, the fastest example burn rate in *Boberg* is only 100 millimeters per second. Because *Boberg*'s charges create delays in firing, one of ordinary skill in the art would not have found it obvious to modify the primer mixes in *John* using the teachings of *Boberg*. One of ordinary skill in the art would instead be deterred from such combination because of the expected detrimental decrease in *John*'s detonation velocity. See *Tec Air*, 2 USPQ 2d at 1298.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection under 35 USC § 103(a) based on *John* and *Boberg* or *Calsson*.

**CONCLUSION**

In view of the above remarks, Applicants respectfully assert that the rejections of the claims as set forth in the Office Action have been addressed and overcome. Applicants further respectfully assert that all claims are in condition for allowance and request that an early notice of allowance be issued.

If issues may be resolved through Examiner's Amendment, or clarified in any manner, please call the undersigned attorney at (404) 879-2443.

The Commissioner is hereby authorized to charge any required fees or credit any overpayment to Deposit Account No. 09-0528.

Respectfully submitted,

Date: 10/2/07

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